

RANCHO SANTA ANA BOTANIC GARDEN
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DUDLEYA PULVERULENTA
CHALK DUDLEYA

1944

RANCHO SANTA ANA BOTANIC GARDEN
of the
NATIVE PLANTS OF CALIFORNIA
Santa Ana Cañon, Orange County, California
Established 1927 in Memory of
JOHN W. BIXBY

DUDLEYA PULVERULENTA
CHALK DUDLEYA

Crassulaceae

Stonecrop Family

Perennial succulent herb, from a short, thick rootstock and bearing numerous leaves in a rosette, often over a foot across. Stem elongates in age, and is densely clothed with old brown, dead leaves. Herbage light gray-green, covered with dense, chalky-white or mealy powder, this variable with season and age of leaves or stems. Basal leaves 6-8 in. long, 2-3 in. wide, obovate, spatulate, usually abruptly reduced to a point or mucro. Flowers on axillary stems 1-3 ft. high, often several to a rosette; stem leaves small, ovate or acute, clasping; inflorescence of several ascending racemes, 6-12 in. long; pedicels slender, $\frac{1}{4}$ - $\frac{1}{2}$ in. long; calyx $\frac{1}{4}$ in. long, with 5, lanceolate, acute lobes; petals 5, convolute in bud, erect, acute, $\frac{3}{8}$ in. long, united for one-half their length and forming a tubular flower; stamens 10, distinct; carpels 5, with short, slender styles. Fruits of 5 follicles, $\frac{1}{2}$ in. high, dehiscent on inner suture, containing numerous, almost dust-like seeds. Seedlings minute; cotyledons foliar, oval, sessile, $\frac{1}{64}$ in. long, functional, later $\frac{1}{8}$ in. long, thickened and fleshy; next leaves opposite, narrower; stem at first a succulent, spherical body about $\frac{1}{16}$ in. long. Flowers May to July; seeds July to September.

The genus *Dudleya* (in honor of Wm. R. Dudley, first professor of systematic botany at Stanford University, 1849-1911) consists of about 30 species of western North America, of which 17 occur in California. It was proposed in 1903 by Britton and Rose; its distinctive features being erect sepals, convolute corolla-lobes, and persistent basal leaves. Many of its species have been included in *Cotyledon*, a strictly Old-World genus, or in *Echeveria*, a Mexican genus. Many species of these two genera are cultivated, whereas species of *Dudleya* are of little horticultural value.

Dudleya pulverulenta (Latin meaning covered with dust or white powder) was discovered in 1836 at San Diego by Thos. Nuttall (English-American botanist, 1786-1859) and described by him in 1840 as *Echeveria pulverulenta*. Brewer and Watson transferred it to *Cotyledon* in 1876. Britton and Rose, in erecting their new genus *Dudleya* in 1903, included it. *D. Anthonyi*, of Baja California, and *D. arizonica* (including *D. lagunensis*), of western Arizona and the deserts of southern California, are closely related to *D. pulverulenta*.

Distribution of *D. pulverulenta* is restricted to coastal regions of southern California from San Luis Obispo Co. to San Diego Co., and northern Baja California. It ranges from the immediate coast to inland stations of at least 3000 ft. (Cuyamaca Mts.), but does not grow on the deserts. Its favorite habitat is a steep ridge or cliff of sandstone or broken granite, and it is on such inaccessible spots that the finest and largest specimens are produced, some of which are over 18 in. across and may well be from 50-100 years old. Nature has well fitted this species to survive under extremely rigorous conditions. The dust-like

seeds are transported by the wind so that every crevice of the steep cliffs is eventually seeded. The minute seedlings grow quickly following the first fall rains. When favorably situated they attain sufficient size and get their roots deep enough to survive the first summer. Mature plants lose a great deal of their moisture during the long dry summer, but following the first fall rains the leaves again become turgid, new growth begins and many new leaves are formed. In April the flower stalks shoot up, and flowers and seeds are ordinarily produced at the expense of water and food stored in the leaves. Stems of *D. pulverulenta*, unlike several other species, practically never branch, and perhaps for this reason it rarely occurs in masses.

Chalk Dudleya and Chalk-Lettuce are English names applied to *D. pulverulenta* because of the chalky-white leaf surfaces and the faint resemblance of the plants to heads of lettuce. It is said that the Indians used the leaves as a source of food.

We have grown Chalk Dudleya for many years, but our early collections were rosettes from the wild, many of which were large and eventually rotted. Several were placed in large clay pots in 1933 and hung on a balcony where they were watered regularly for several years, but for the past four years have received no water other than natural rainfall. Although these plants are still alive, they are hardly attractive now, but they well illustrate the tenacity with which members of this family cling to life.

Propagation of this species from seeds proved to be an interesting and successful undertaking. In September, 1940 we collected about one-fourth of an ounce of seeds (probably about 350,000 seeds). These were planted on November 2, 1940 in a standard flat, were covered with glass and placed in the glasshouse. Six days later the first seedlings appeared, and in twenty-six days the flat was covered solidly with the minute, bright green seedlings, which even by a conservative estimate amounted to over 100,000. By the end of December the seedlings were large enough to handle and 1000 little clumps were transferred to flats at the rate of 64 per flat. Over 500 of these were later put in 6-inch pots for planting out in the winter of 1941-42. Three plantings were made: the first was on a rocky south slope; the second on a north slope in clay; and the third on an east slope in loam around sandstone outcrops. All of these have been successful; some of the rosettes are now over a foot across and have bloomed for two seasons. We have learned that it is normal for the rosette to be tilted and have made our plantings accordingly. This permits excessive water to drain off, prevents rotting the crown, and is possibly the most important cultural practice for success.

D. pulverulenta has only limited use in gardens, largely because of its retention of old dead leaves, its semi-dormancy in summer and its dislike for summer watering. For sandstone cliffs or other rugged situations it is a rather spectacular plant, particularly when used with other California native plants, and will thrive under conditions that would kill choice Mexican Echeverias or Old-World Cotyledons.

CARL B. WOLF

RANCHO SANTA ANA BOTANIC GARDEN

Dedication of Garden Foundation to the Board of Trustees for the Rancho Santa Ana Botanic Garden of the Native Plants of California:

"THE NATURE, OBJECT AND PURPOSE OF THE INSTITUTION
HEREBY FOUNDED AND TO BE MAINTAINED HEREUNDER.

ITS NATURE: A botanic garden of the native plants of California, herbarium and botanical library, containing living and/or preserved specimens of trees, plants and flowers native to California, and literature relating thereto.

ITS OBJECT: The preservation and improvement of the property now transferred and such property as may hereafter be transferred to the Trustees for those who not only wish to enjoy, but to study, assembled in one accessible locality, native California plants; and for the advancement of science and education with reference to plant life indigenous to the State of California.

ITS PURPOSES: (a) An institution founded primarily for scientific research in the field of local botany.

(b) To preserve the native California flora, try to replenish the depleted supply of some of the rarest plants which are rapidly being exterminated, and bring together in a comparatively small area as complete a collection of the rich store of native California plants as can be grown in this southern section of the state, thereby promoting the general welfare of the people of the state by providing the means for encouraging and carrying on the above mentioned activities in said state and by doing such other things as may be necessary and desirable to carry out the objects hereof."

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